

**Protective collar for the therapeutic protection of the head and face of very young children**

**Specification**

The present invention relates to a collar suited for protecting the head or face of very young children, according to the preamble of Claim 1.

Therapeutic protective collars of the kind to which the invention relates serve to restrict the freedom of movement of the arms of very young children, i.e. of babies up to the age of approximately one year, that suffer from an external injury or from an operation wound, for example due to a surgical operation for treatment of an anomaly of the cleft palate, so as to prevent that the children concerned touch the respective area of their head by their hands as part of their natural behavior, possibly tear off a bandage applied in that area or even touch the operation area. Any such contact would considerably disturb the healing process, or in the worst of all cases would lead to undesirable infections and, as a result thereof, considerable complications in the healing process.

A protective collar has been disclosed by DE 196 29 581 A1, which collar is however suited exclusively for small animals. The described collar is said to distinguish itself especially by the fact that due to the particular configuration of the collar as a truncated cone, in lengthwise direction of the animal, comprising two parts of different stiffness that are undetachably connected in this direction,

the general well-being of the small animal is impaired to a very small degree only. As a result of that configuration, the collar is said to adapt itself flexibly to the motion sequences of the animal carrying the collar, whereby the part of the body to be protected is prevented from being damaged by biting, or even from being licked. When stronger restriction of the freedom of movement of the head is required, the more flexible portion of the protective collar is arranged adjacent the stiffer portion of the collar. However, when the freedom of movement is to be restricted only slightly, the flexible portion can be drawn over the stiffer portion so that the animal is allowed a larger field of vision. A protective collar of that kind is not suited for use on humans.

Another way of providing a face protection, especially for persons, consists in the use of face masks, such as the masks disclosed for example in the prior publications DE 100 02 350 A1, US 5,500,954 and US 2002/0053348 A1.

It has further been known in connection with surgical and/or therapeutic medical measures to be carried out on very small children to prevent the child from touching his/her face with his/her hands or fingers by fixing the child's arms with the aid of perforated plastic tubes so that, while the arms can still be moved, they cannot be flexed.

Another method sometimes used for fixing the tiny arms of a very small child consists in fixing the arms by gauze bandages.

Both methods for fixing the arms of a very small child are connected with the disadvantage that the freedom of movement of the child's arms is considerably restricted, whereby the free motor activity of the very small child is considerably disturbed or even psychical disorders may develop.

Now, it is the object of the present invention to provide a face protection suited for very small children for the before-mentioned therapeutic purpose, which

most efficiently prevents the face or head from being touched by the child's hands or fingers, while at the same time restricting the freedom of movement of the child's arms as little as possible.

This object is achieved by the features defined in Claim 1. Advantageous further developments are the subject-matter of the sub-claims.

The protective collar proposed by the invention comprises a substantially flat annular part, preferably consisting of a single piece, which is interrupted on one side (i.e. is open on one side) and which, in the area of that opening, comprises fastening means that allow the annular part to be assembled in such a manner as to form a collar which generally has the shape of a truncated cone. Preferably, the fastening means consist of a Velcro fastener.

Due to its inherent stiffness, which is a result of its particular form in the assembled state, the protective collar advantageously can be made from an especially light-weight material such as fabric, felt, a plastic material or a flat cushion filled with a corresponding molded body, so that the protective collar exerts only extremely low traction forces on the child's neck. Especially, the proposed collar does not contain any hard or sharp-edged areas or parts that may cause injury to the very small child.

Due to its structure and shape, the protective collar can be attached easily and quickly around the child's neck. The preferably flat Velcro fastener or the like imparts to the protective collar, in its assembled condition, sufficient stability though not an excessively high inherent stability, so as to impair the well-being of the child as little as possible.

Further, the protective collar according to the invention can be easily adapted to different neck diameters by simply selecting the required neck opening during assembly of the collar around the child's neck.

The invention will be described in more detail hereafter with reference to the attached drawing, by way of a preferred embodiment from which additional features and advantages of the invention will become apparent.

In the drawings:

Fig. 1a shows a top view of a protective collar according to the invention prior to its assembly;

Fig. 1b shows a perspective side view of a protective collar according to the invention, in assembled condition; and

Fig. 2 shows the same perspective side view of the collar according to the invention attached around the neck of a very small child, the latter being shown only diagrammatically.

According to the top view of Fig. 1a, the protective collar according to the invention comprises an annular part 10 which is interrupted or open 15 on one side in the non-assembled condition. The substantially flat annular part 10 consists of non-woven felt in the illustrated embodiment. Alternatively, the collar may consist of a flat inlay, of slight inherent stability, or of a flat cushion or the like filled with a filling material.

The annular part 10 comprises a circular inner opening 20 having a diameter  $d$  which after assembly around the child's neck is substantially filled up by the latter, it being understood that the diameter  $d$  of the annular part 10 decreases of course a little during assembly.

The slot-shaped opening 15 on one side of the annular part 10 serves to enable the collar 10 to be placed around the neck of a very small child. To this

end, the annular part 10 comprises a usually two-part Velcro fastener 25', 25" in the area of the opening 15, in the preferred embodiment at the two annular ends 17, 18, reference numeral 25' defining the hook fleece, while reference numeral 25" defines the associated loop fleece. It goes without saying that the described fastening means 25', 25", instead of being arranged directly at the annular ends 17, 18 may of course also be arranged at a certain distance from the annular ends 17, 18.

Using the Velcro fastener 25', 25", the annular part 10 can be joined around the neck of a very small child, as illustrated diagrammatically in Fig. 2, in the form shown in Fig. 1b and can then be assembled as illustrated in Fig. 2.

Fig. 1b further illustrates the way in which the protective collar 10 is held together by the two parts 25', 25" of the Velcro fastener. Further, the inner, substantially circular opening 20 developing during assembly is illustrated by broken lines in that Figure, being hidden behind the outer front wall of the annular part 10 in that Figure.

According to another embodiment, not shown in the drawing, the annular part 10 consists of an inner part having a certain inherent stiffness and a detachable envelop made from a fabric or plastic material, or the like, intended to be placed on top, the envelope being made from a material that can be easily cleaned or washed. This two-part design of the annular part 10 permits the relatively high demands, that are placed on hygiene aspects especially in hospitals, to be met without any problems.

The protective collar is deformable so that no disturbing and unnatural posture of the child's head will be provoked for example if a very small child sleeps lying on one side. The elasticity of the protective collar then is such that on the one hand the sleeping child will be disturbed either not at all or only to a very little

degree, while on the other hand any contact with the face is rendered impossible in that sleeping position.

Moreover, fastening means (also not shown in the Figure) may be provided in the inner area of the annular part 10 (which later faces the child's neck) for fastening or fixing a preferably tube-shaped therapeutic device, for example a probe device (stomach probe, etc.) or an infusion tube. It thereby can be ensured that the very small child can reach that device with his/her hands or fingers either not at all or only with very great difficulty so that the device is protected from being moved, displaced or even torn off or torn apart.

Fig. 2 further illustrates the way in which the protective collar adapts itself closely to the child's neck in the assembled condition. That arrangement guarantees that the collar will not slip or tilt to the rear and that the child is effectively prevented, in any position, i.e. when lying or standing, from reaching his/her face when rising his/her arm 30°, not even if his/her forearm should be angled, as illustrated diagrammatically in the drawing.

The before-mentioned non-slipping feature of the collar finally is assisted by the fact that due to its shape, resembling a truncated cone, the protective collar is substantially fixed in the position in which it was attached, in the direction of the neck, which effect is further supported by the shape of the child's head (chin, etc.).